

Datalogger lot

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Datalogger IoT 課程



@宅老大數位 2025/2/25

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Datalogger lot 介紹及開發環境建立

Datalogger IoT 簡述



首頁 | 解決方案 | 開發者專區 | 雲服務 | 論壇 | 相關連結 | 登入



Datalogger (by Kevin's Lab)



Partner Designed



Manual



Buy it



Tutorial



MCU

Part Number: RTL8720DF

32-bit KM4 (Arm Cortex-M33 compatible)

32-bit KMO (Arm Cortex-M23 compatible)



MEMORY

512KB SRAM + 4MB Flash



KEY FEATURES

Integrated WiFi 4 (802.11 b/g/n 1x1) SoC

Dual-band, 2.4GHz or 5GHz

Bluetooth LE 5.0

Bluetooth high-power mode up to 10dB

Low Power Mode

Auto Download Mode

On-board PCB antenna

DC IN: 6V ~ 24V

DC OUT: 5V / 1A

Arduino Uno mounting holes

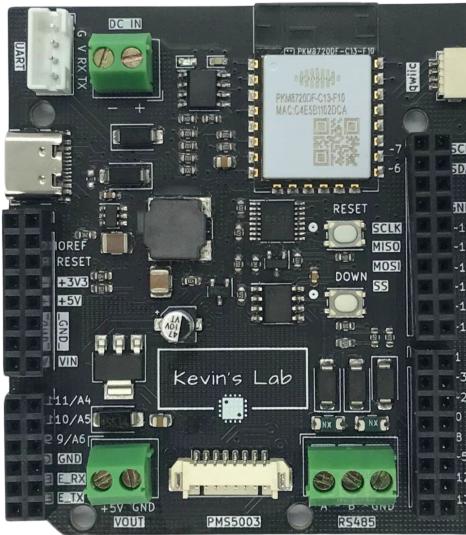
Popular Connectors: qwiic(I2C), UART(JST2.0), RS485

UART expansion

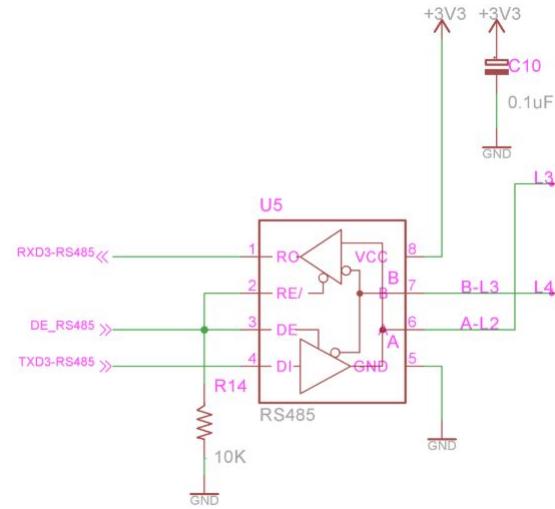
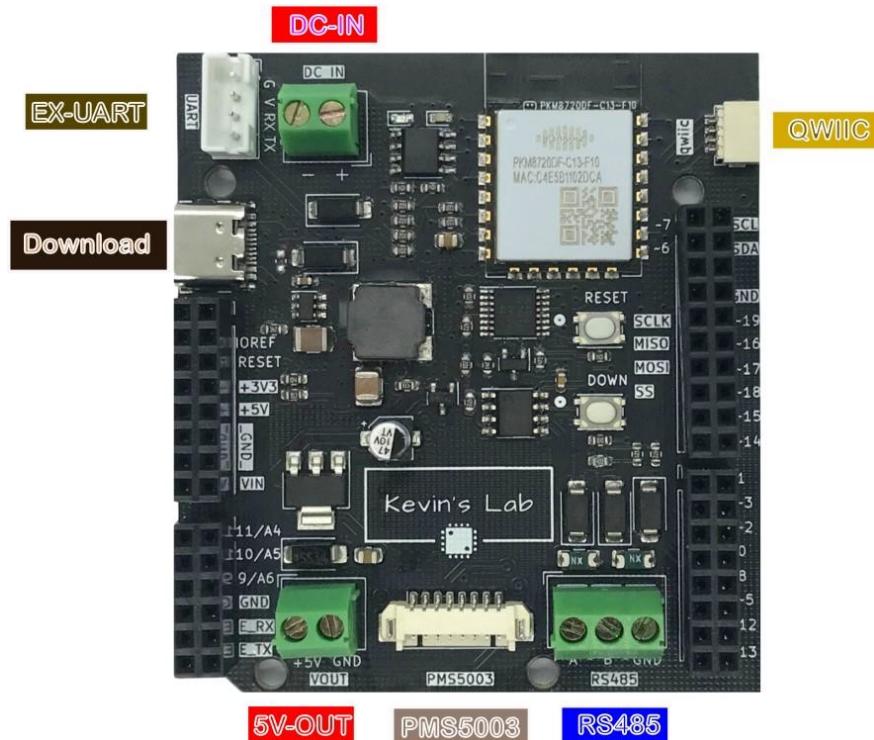
RS485 with TVS + PTS protection and 120-ohm resistor

Datalogger IoT 簡述

- 針對工業應用需求設計的 UNO 開發板
- 內建 qwiic 介面,支援多種 I2C 傳感器模組快速擴充
- 集成 RS485 通訊介面,內置 PTS 和 TVS 保護電路
- 內置專用 PMS5003 顆粒物傳感器連接器,方便接線
- 集成 RS485 通訊介面,內置 PTS 和 TVS 保護電路
- 內置專用 PMS5003 顆粒物傳感器連接器,方便接線



Datalogger IoT 簡述

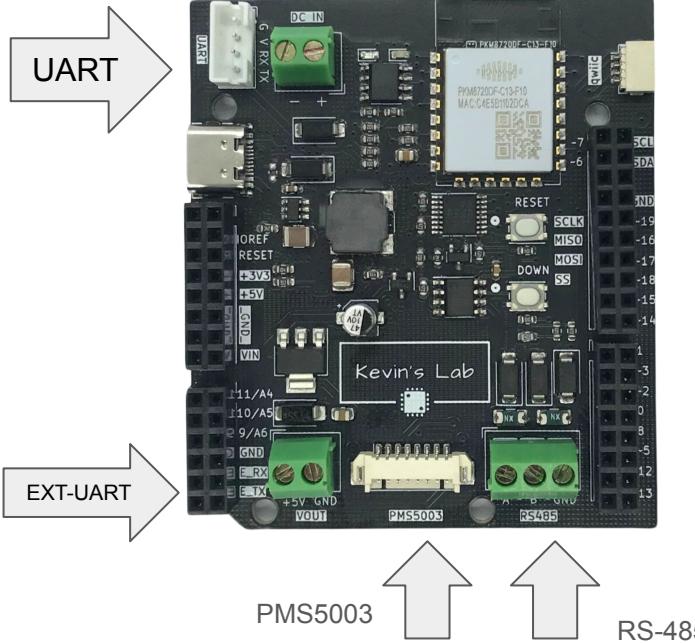


- RS485 電路已有 120 歐姆 電阻
- DE - /RE 不需要控制

Datalogger IoT 簡述

- RS-485 基本介紹及應用
 - <https://youtu.be/kVcQPMIYbYw>
- 工具軟體及簡報
 - <https://reurl.cc/ZZ3RoM>

UART 擴充



Share UART2 (Serial2).	S1	S0
PMS5003	0	0
RS485	0	1
UART (JST 2.0mm)	1	0
EXT-UART	1	1

切換UART 使用方法

<https://www.amebaiot.com/zh/amebad-amb26-arduino-getting-started/>

	GPIO pin	GPIO INT	ADC	PWM	UART
0	PA15	✓			
1	PA14	✓			
2	PA13	✓		✓	SERIAL2_RX
3	PA12	✓		✓	SERIAL2_TX

```
#define S0 1
#define S1 0

void setup() {
    pinMode(S0, OUTPUT);
    pinMode(S1, OUTPUT);

    digitalWrite(S0, LOW);
    digitalWrite(S1, HIGH);
}
```

切換UART 使用方法

```
#define S0 1
#define S1 0

int chr;
void setup() {
    // put your setup code here, to run once:
    Serial.begin(115200);
    Serial2.begin(9600);

    pinMode(S0, OUTPUT);
    pinMode(S1, OUTPUT);

    digitalWrite(S0, LOW);
    digitalWrite(S1, HIGH);

    delay(500);

    Serial2.println("TEST Serial");
}


```

Serial_read_test.ino

```
void loop() {
    // put your main code here, to run repeatedly:

    if(Serial2.available()){
        while((chr = Serial2.read()) > 0){
            Serial2.println(char(chr));
        }
    }
    delay(100);

    //Serial2.println("TEST Serial");
    delay(500);
}
```

切換UART 使用方法

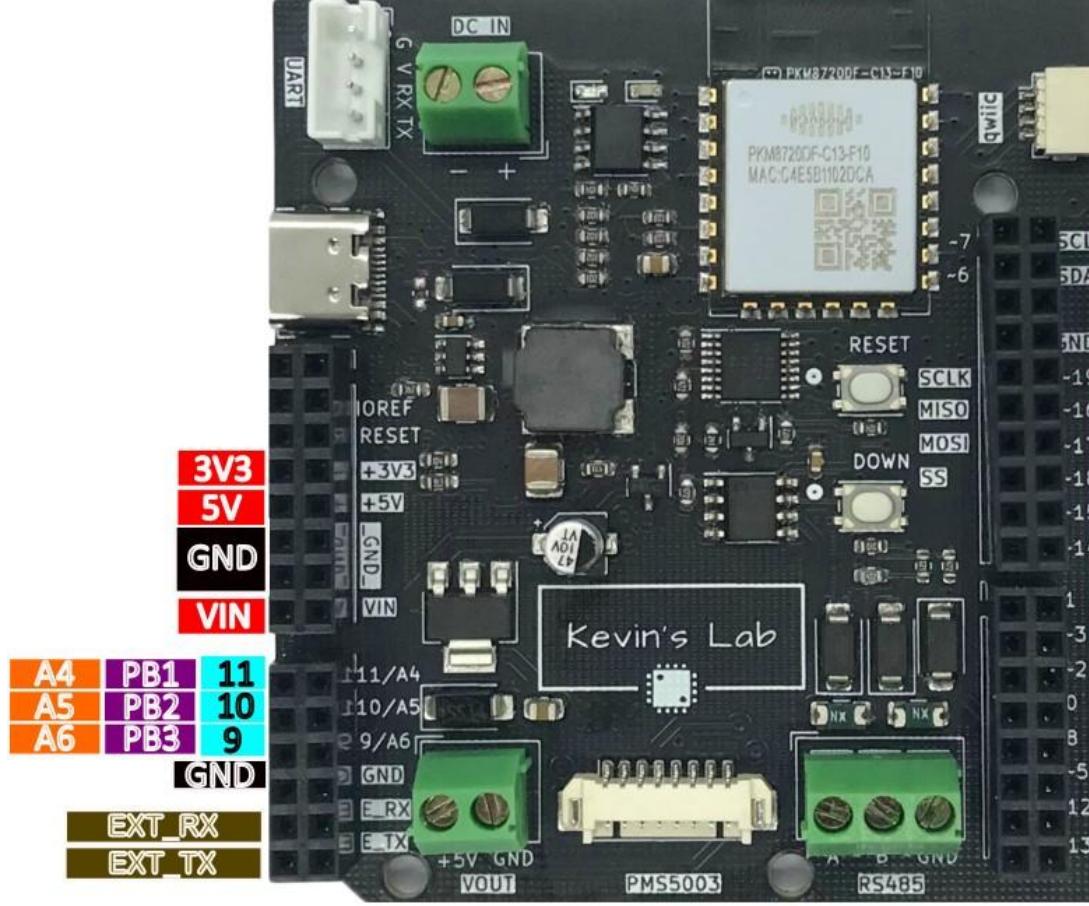
<https://www.amebaiot.com/zh/amebad-amb26-arduino-getting-started/>

PMS3003_AirQuality.ino

	GPIO pin	GPIO INT	ADC	PWM	UART
0	PA15	✓			
1	PA14	✓			
2	PA13	✓		✓	SERIAL2_RX
3	PA12	✓		✓	SERIAL2_TX

```
#include <SoftwareSerial.h>  
  
SoftwareSerial mySerial(2, 3); // RX, TX
```





7	PA25	PWM	SCL	
6	PA26	PWM	SDA	
GND				
19	PB20	PWM	SPI_SCLK	
16	PB19	PWM	SERIAL1_TX	SPI_MISO
17	PB18	PWM	SERIAL1_RX	SPI_MOSI
18	PB21	PWM	SPI_SS	
15	PB22	PWM		
14	PB23	PWM		
1	PA14	SPI1_SCLK		
3	PA12	PWM	SERIAL2_TX	SPI1_MOSI
2	PA13	PWM	SERIAL2_RX	SPI1_MISO
0	PA15	SPI1_SS		
8	PA27			
5	PA28	PWM		
12	PA7	LOG_TX		
13	PA8	LOG_RX		

VCC

GND

GPIO

ANALOG

PWM

I2C

UART

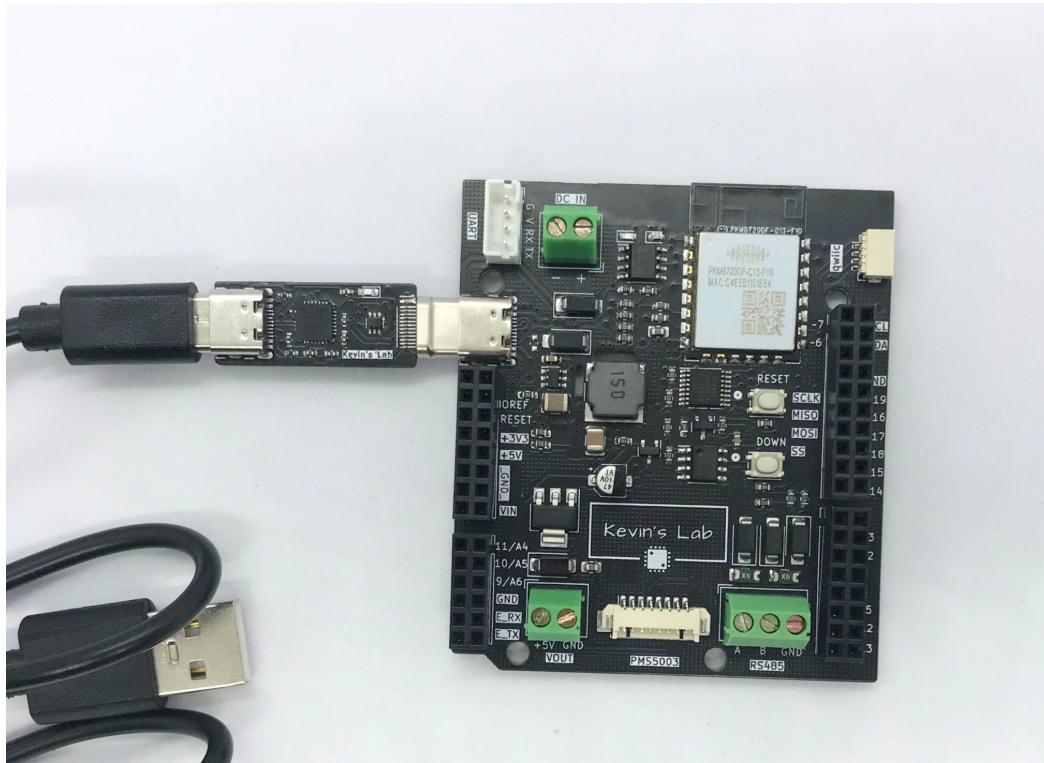
SPI

- USB 上傳工具驅動程式
- Arduino IDE 安裝
- 執行 Blink 程式測試

USB 上傳工具



USB 上傳工具



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USB 上傳工具

將USB 上傳工具接入 Type-C 及電腦

如果在 裝置管理員 出現 驚嘆號,

表示需要安裝驅動程式



USB 上傳工具

開啟網頁：

<https://www.silabs.com/developers/usb-to-uart-bridge-vcp-drivers?tab=downloads>

USB 上傳工具

Windows 選擇

CP210x Windows Drivers

Software Downloads

Software (10)

Mac 選擇

CP210x VCP MAC OSX Driver

Software · 10

CP210x Universal Windows Driver

v11.3.0
6/24/2023

CP210x VCP Mac OSX Driver

v6.0.2
10/27/2021

CP210x Windows Drivers

v6.7.6
9/4/2020

CP210x Windows Drivers with Serial Enumerator

v6.7.6
9/4/2020

CP210x_5K_AppNote_Archive

9/4/2020

CP210x_VCP_Win2K

9/4/2020

Linux 2.6.x VCP Revision History

9/4/2020

Linux 3.x.x/4.x.x/5.x.x VCP Driver 🔒

v3.x.x/4.x.x/5.x.x
1/29/2021

VCP Driver for WinCE60

v2.1
9/4/2020

VCP Drivers for WinCE50

v2.1
9/4/2020

USB 上傳工具

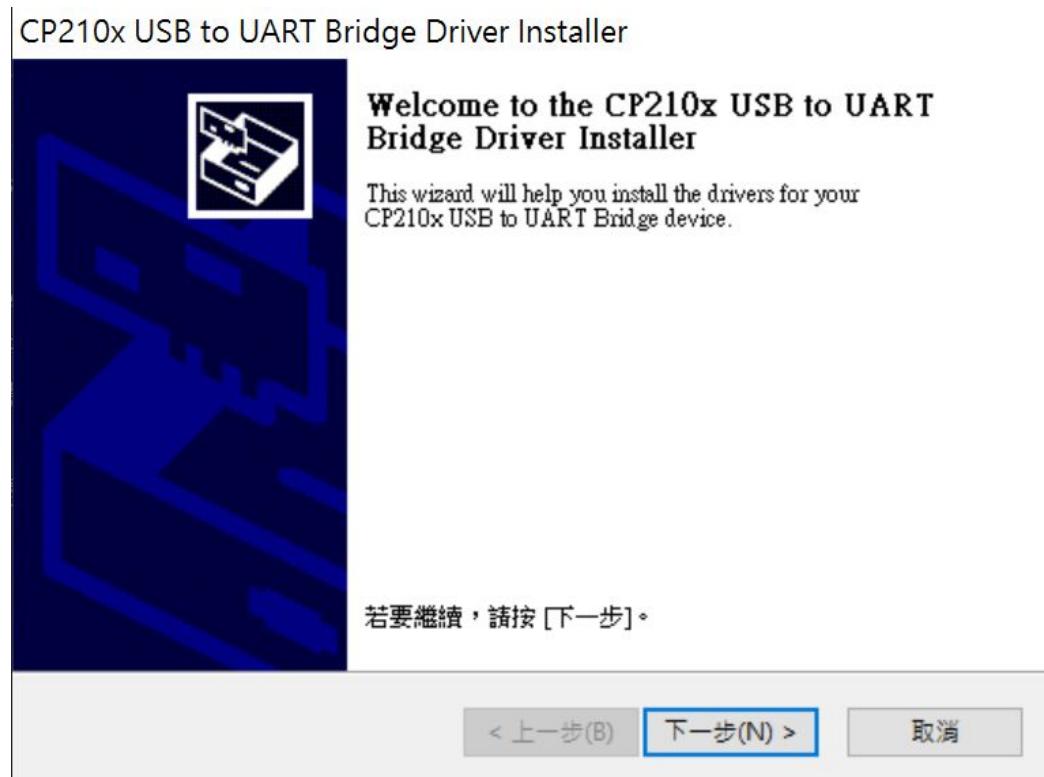
下載後，並解壓縮。找到

CP210xVCPIInstaller_x64.exe

並執行它

USB 上傳工具

按下一步繼續，
按指示安裝。



USB 上傳工具

重新拔插 Type-C

下載及安裝 Arduino IDE

下載點

arduino.cc/en/software



Arduino IDE 2.1.0

The new major release of the Arduino IDE is faster and even more powerful! In addition to a more modern editor and a more responsive interface it features autocompletion, code navigation, and even a live debugger.

For more details, please refer to the [Arduino IDE 2.0 documentation](#).

Nightly builds with the latest bugfixes are available through the section below.

DOWNLOAD OPTIONS

Windows Win 10 and newer, 64 bits

Windows MSI installer

Windows ZIP file

Linux AppImage 64 bits (X86-64)

Linux ZIP file 64 bits (X86-64)

macOS Intel, 10.14: “Mojave” or newer, 64 bits

macOS Apple Silicon, 11: “Big Sur” or newer, 64 bits

[Release Notes](#)

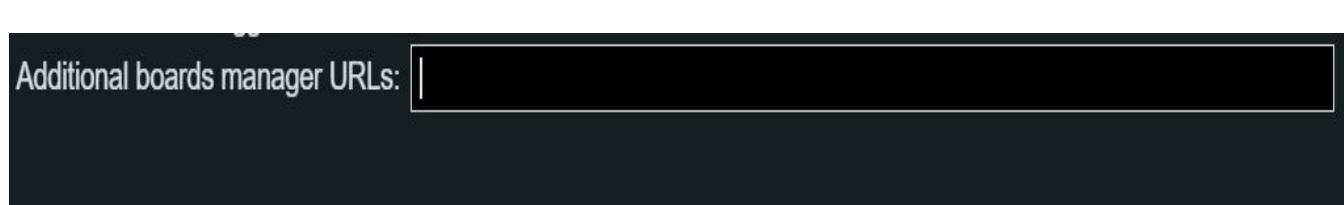
Arduino 設定

複製以下連結

https://github.com/ambiot/ambd_arduino/raw/master/Arduino_package/package_realtek_amebad_index.json

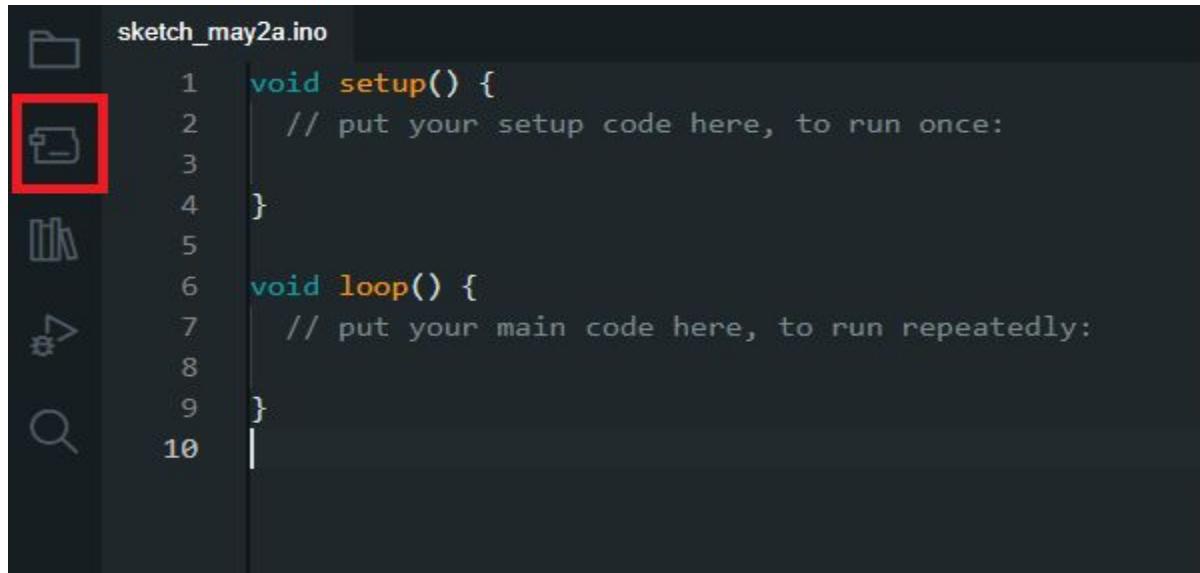
開啟 File / preferences

在 Additional boards manager URLs 的欄位 貼上 上述網址, 點 OK
結束設定



Arduino 設定

點取左側 第二個圖示， Boards Manager

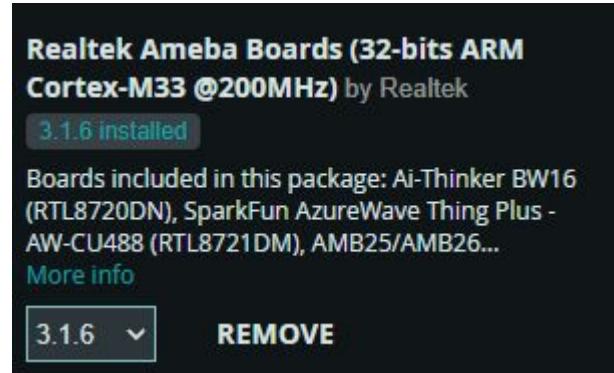


The screenshot shows the Arduino IDE interface. On the left, there is a vertical toolbar with several icons: a folder, a file (highlighted with a red box), a book, a gear, and a magnifying glass. The main area is titled "sketch_may2a.ino" and contains the following code:

```
1 void setup() {
2     // put your setup code here, to run once:
3
4 }
5
6 void loop() {
7     // put your main code here, to run repeatedly:
8
9 }
10
```

開發環境安裝 - Arduino 設定

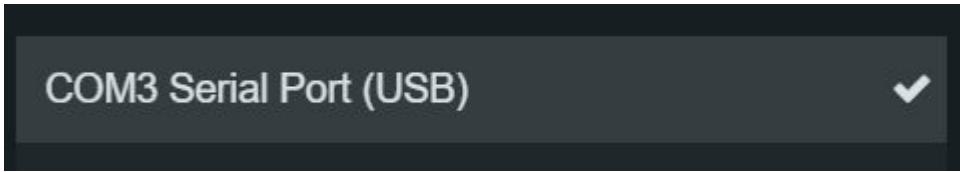
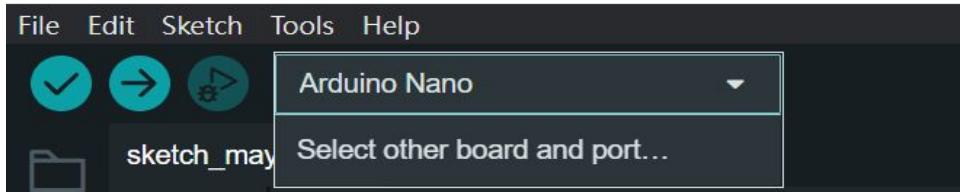
輸入 ameba



選擇 Realtek Ameba Boards (32-bits ARM Cortex-M33 @200MHz)
[安裝最新版本](#)

開發環境安裝 - Arduino 設定

透過 USB 連接 開發板



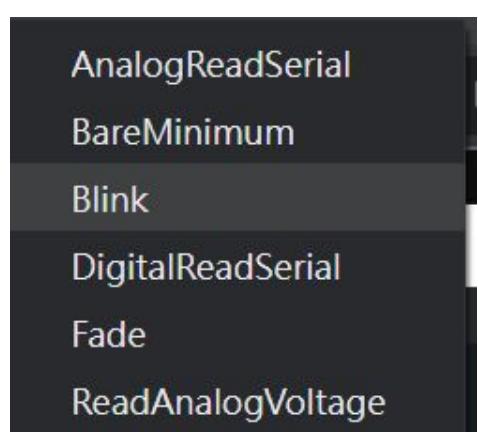
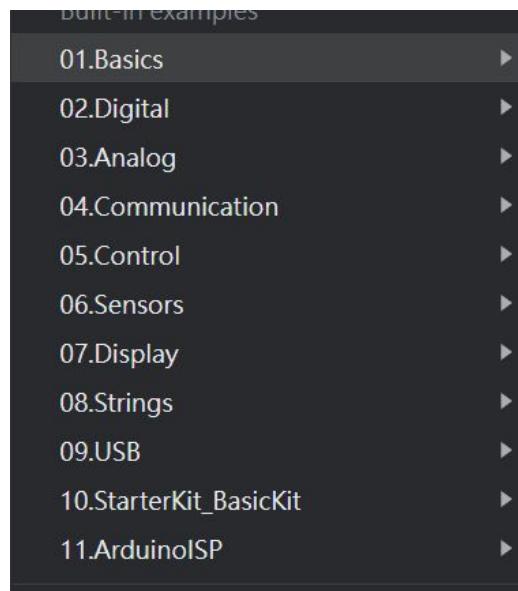
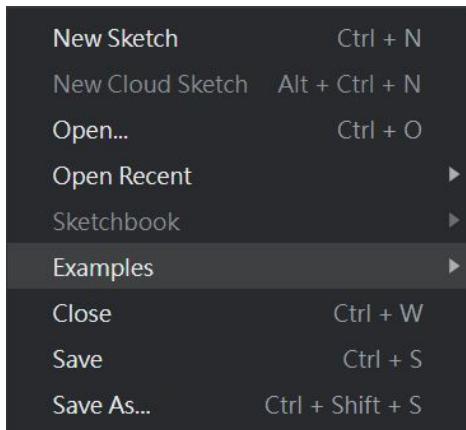
選擇 Select other board and port

Board 選擇 AMB25/AMB26(RTL8720DF)

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第一個程式

打開 File / Examples / 01.Basics / Blink



常用程式庫安裝及使用

常用程式庫安裝及使用

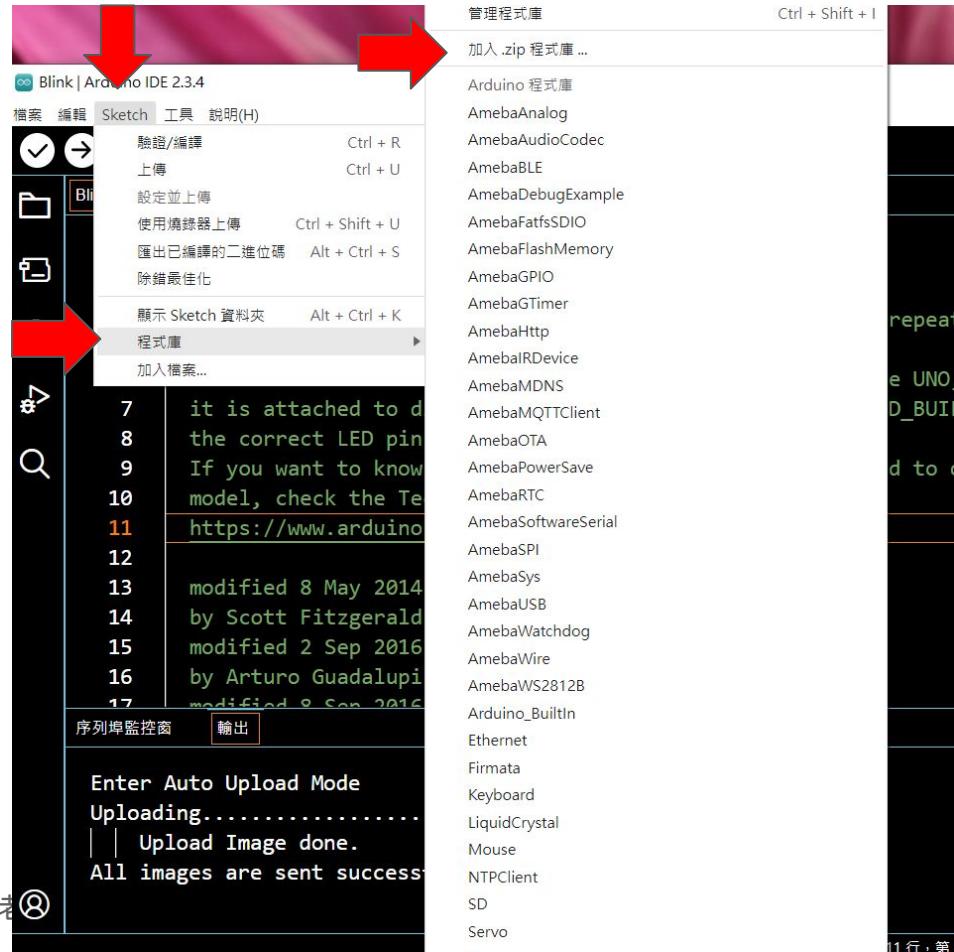
- 範例程式及資料 (操作手冊及程式庫)
 - https://github.com/cold63/Datalogger_Iot/tree/main

The screenshot shows the GitHub repository page for 'Datalogger_Iot'. The repository is public and has a main branch, 2 branches, and 0 tags. It includes a search bar, a 'Go to file' button, an 'Add file' button, and a 'Code' button. Below the header, there's a list of recent commits:

Commit	Message	Time
	cold63 Merge pull request #24 from cold63/master	7fc850c · 35 minutes ago
	libraries upload library, sd card and rs485	36 minutes ago
	src update data	last week
	tools add software tool , serial port utility	2 weeks ago
	Datalogger開始_安裝及使用_V1_0.pdf update user	last week
	README.md update README.md	4 months ago

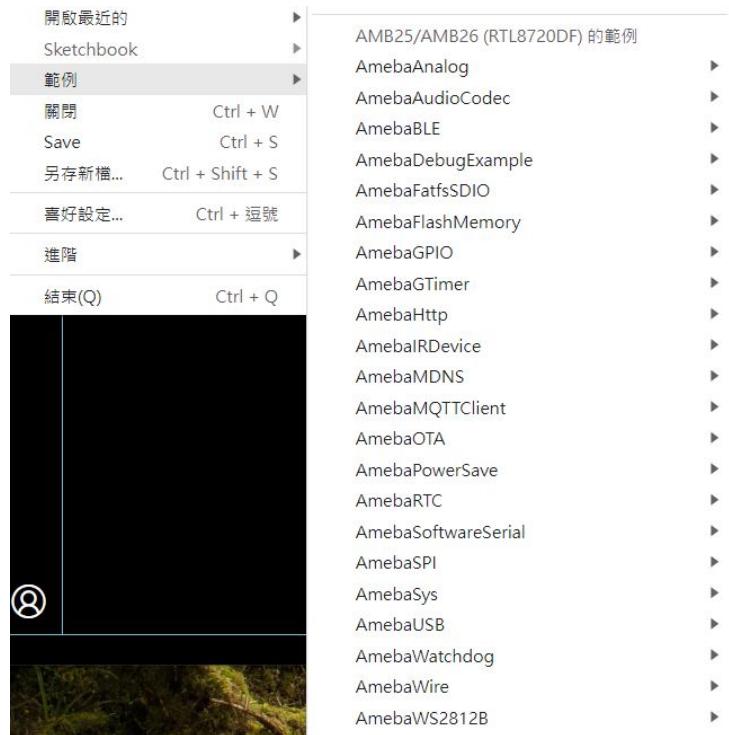
常用程式庫安裝及使用

安裝 Zip 程式庫的方法



常用程式庫安裝及使用

Realtek 提供的 Arduino 範例



常用程式庫安裝

- RS-485
 - *ModbusMaster* by Doc Walker (Arduino IDE 安裝)
 - *Modbus-Master-Slave-for-Arduino* (下載安裝)
- SD Card
 - *SdFat* (下載安裝)
- Oled
 - u8g2

Zip 封裝的程式庫下載點

https://github.com/cold63/Datalogger_lot/tree/main/libraries



常用程式庫安裝

- GPS
 - TinyGPSPlus by Mikal Hart



常用程式庫安裝

- SHT40溫溼度感測器
- SCD41 CO2感測器
- SGP41 VOC 感測器



- 更多說明

- 簡報 PPT

https://drive.google.com/file/d/1_ziPKTQeGlfK6sR4qf2s5Ucs9x7_mVnH/view?usp=drive_link

- 影片教學

<https://youtu.be/PnugtvNAYm4?si=vTWu-wSavQ1MqrZg>

- LoRa 擴展板

- *LoRa* (Arduino-LoRa)
- 影片教學

<https://youtu.be/6fWbL9OZpi4?si=70gOtnDco5ruITBp>

- 簡報 PPT

<https://reurl.cc/Kdbn3y>

